

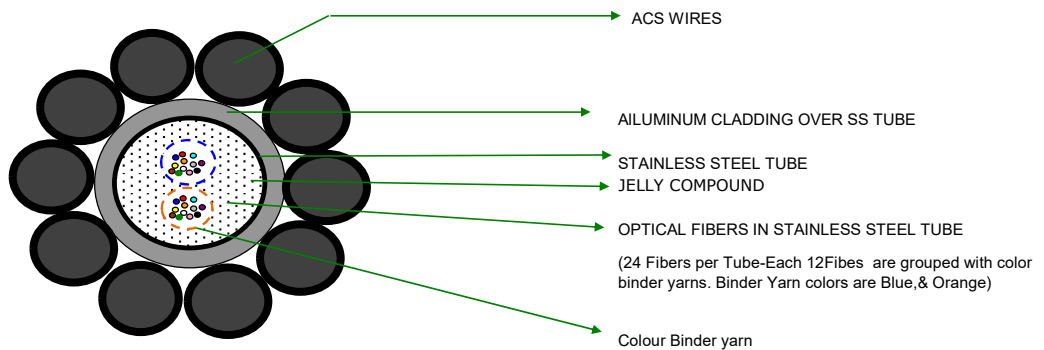
Specification Sheet for 24F OPGW

FGB024-1B5.00-1000

PRODUCT INFORMATION

	NOS.	MATERIAL	NOMINAL VALUE
OPTICAL UNIT			
Optical Fibre	24 Nos.	ITU-T G652 D	STERLITE
Cabled attenuation 1310/1550nm		Maximum	≤ 0.36/0.23 dB/Km
Filling Gel		Hydrogen scavenging Type	Thixotropic jelly
Fiber Tube	1 Nos.	Aluminum clad SS tube	5.00 mm Nominal Diameter
GROUNDING UNIT			
Protective Layer - Outer	10 Nos	20.3% ACS wires Right Hand Lay	2.10 mm Nominal Diameter
Cable Details			
Overall diameter		Single Layer	9.20 mm Nominal Diameter
Total Cross sectional Area			47.66 mm ²
ACS Wire Cross-Sectional Area			34.64 mm ²
Aluminum Tube Cross-Sectional Area			11.08 mm ²

CONSTRUCTIONAL DETAILS



*Cross sectional drawing for indication only, not to scale

Ultimate/Rated Tensile Strength 52 kN Modulus Of Elasticity 134.9 KN/mm2	General Tests	IEC 60794, IEEE 1138:2021
	Construction	IEEE 1138 :2021
	ACS wires	IEC 63248
	AA wires	IEC 62641

ELECTRICAL PROPERTIES

DC Resistance at 20°C	1.26 Ohm/Km	Fault Current Capacity	17.0 kA ² .sec
Short Circuit Current Rating	4.12 kA for 1 sec.	Temp. change from	40 to 220 °C
Lightning Arc test (EN 60794-1-402) : Class-0 (Current 100 A, Duration 500 ms, Charge Transfer 50 C)			

ENVIRONMENTAL PROPERTIES

Coefficient of linear Expansion 14.0 × 10 ⁻⁶ 1/°C	Operating Temperature Range	- 40 °C to +85 °C
	Installation Temperature Range	- 30 °C to + 70 °C

OPTICAL UNIT

Color Coading of Optica Fibers in Optical Unit (Stainless steel tube)

	Binder Yarn color	Fiber Colors											
		1	2	3	4	5	6	7	8	9	10	11	12
Fiber 1-12	Blue	Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Violet	Pink	Aqua
Fiber 13-24	Organge	13	14	15	16	17	18	19	20	21	22	23	24
		Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Violet	Pink	Aqua

PHYSICAL PARAMETERS

Overall Diameter (mm)	9.20 ± 3%	Cable wt. (Kg/km)	285 ± 5%	Standard Cable length	5000 ± 5% Meters
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Guaranteed Technical Particulars 24F OPGW

Item #	Description	Unit	Required	Offered
1A	<u>Optical Ground Wire (OPGW) TYPE A</u> For 110 kV OHL GW Type C-50 (TK 9,1)			
1.1A	<u>General</u>			
1.1.1A	Manufacturer			Sterlite Power Transmission Limited
1.1.1.1A	- name			Sterlite Power Transmission Limited
1.1.1.2A	- place of manufacture			INDIA
1.1.2A	Type designation			FGB024-1B5.00-1000
1.1.3A	Year of first commercial operation of the type offered	year		2010
1.1.4A	Applicable standards	IEC	ITU-T G.652D; IEC 60794, IEC 60793	ITU-T G.652D;IEC 60794, IEEE 1138
1.2A	<u>OPGW Cable Composition</u>			
	<u>Optical Unit</u>			
1.2.1A	max. number of fibers in one buffer tube			One Optical Unit of Aluminum Clad Stainless Steel tube containing 24 Fibers – each 12 Fibers are Bunched with two Color Binder yarns
1.2.2A	actual number of fibers in one buffer tube		24	24
1.2.3A	Embedding of optical fibers in air or compound?	air / compound		Filling compound -Hydrogen scavenging type
1.2.4A	Spacers within buffer tube?	yes/no		No
1.2.5A	buffer tube:			
1.2.5.1A	- material	Al / St	metallic	Aluminum Cladded stainless steel tube
1.2.5.1A	- extruded or welded?			Stainless steel tube-seamless weld Aluminum Clad steel tube-Extrusion
1.2.5.3A	- inner diameter	mm		3.3 mm stainless steel tube
1.2.5.4A	- outer diameter	mm		5.0 mm Aluminum clad SS Tube

Item #	Description	Unit	Required	Offered
1.2.6A	excess length of optical fiber (over length of buffer tube)	%		≥0.1% (Stainless steel tube)
1.2.7A	number of buffer tubes in cable			One
1.2.8A	are buffer tubes color coded?	yes/no		No
1.2.9A	location of buffer tubes in cable			Center
1.2.10A	<u>Cable Centre</u>			
1.2.10.1A	Is the centre of the cable an optical unit /strain element/ conductor element?			Optical unit
1.2.10.2A	- material			Aluminum clad stainless steel tube
1.2.10.3A	- diameter			5.0 MM
	<u>Armoring Layers</u>			
1.2.11A	Area of load bearing elements	mm ²		47.66
1.2.12A	Number of stranded layers		At least 1 above the optical unit	One layer
1.2.13A	1st layer of stranded wires			
	- number of wires			10 No's
	- shape of wires	e.g. round		Round
	- material of wires			Aluminum Clad steel wires
	- diameter of wires	mm		2.1 mm
	- layer filled with grease?	yes/no		No
1.2.14A	2nd layer of stranded wires			
	- number of wires			NA
	- shape of wires	e.g. round		NA

Item #	Description	Unit	Required	Offered
	- material of wires			NA
	- diameter of wires	mm		NA
	- layer filled with grease?	yes/no		NO
1.2.15A	Winding direction of outer layer	Z or S		Right (Z)
1.2.16A	Cross-sectional drawing attached, drawing Nr.			Specification sheet attached
1.3A	<u>Mechanical Properties of OPGW</u>			
1.3.1A	Cable outer diameter	mm	≤ 9.2	9.2
1.3.2A	Rated tensile strength of cable RTS (calculated acc. to IEC 60794-4-1)	kN	≥ 52	52
1.3.3A	Area of buffer tube included in calculation of RTS?	yes/no		NO
1.3.4A	Everyday stress on cable	N/mm ²		218
1.3.5A	Maximum allowable stringing tension	N/mm ²		436
1.3.6A	Mass of OPGW	kg / km	max. 400	285
1.3.7A	Mass of grease in OPGW (if applicable, and included in the above)	kg / km		NA
1.3.8A	Linear thermal expansion coefficient	10 ⁻⁶ /K		14.0 x 10 ⁻⁶
1.3.9A	Creep yield			
1.3.10A	Minimum bending radius	mm		184
1.3.11A	Modulus of elasticity	kN/mm ²		134.9
1.3.12A	Ambient operating temperature range	°C	- 35 to + 50	-40 to +85
1.3.13A	Max. continuous operating temperature of cable without increase of optical attenuation	°C	≥ 60	Complied
1.3.14A	Maximum crush force			
	- long term	kg/mm ²		148.2
	- short term	kg/mm ²		148.2

Item #	Description	Unit	Required	Offered
1.3.15A	Minimum bending radius			
	- under operating conditions	mm		276
	- under nominal tensile strength	mm		368
1.4A	<u>Electrical Characteristics of OPGW</u>			
1.4.1A	DC resistance at 20 °C R_{DC}	Ohm/km	≤ 0.5	≤ 1.26
1.4.2A	Fault current carrying capacity (at initial temperature 40 °C)	kA ² sec	≥ 60	17 KA ² .sec
1.4.3A	Peak increase of temperature at the fiber when above fault current is applied (ΔT)	K		180 C
1.5A	<u>Optical fibers</u>			
1.5.1A	Manufacturer			Sterlite
1.5.2A	Place of manufacture			India
1.5.3A	Type designation			G652D
1.5.4A	type of fiber		single mode ITU-T G.652D	single mode ITU-T G.652D
1.5.5A	Operation wavelength	nm	1310 and 1550	1310 and 1550
1.5.6A	<u>Geometrical Parameters of Fibers</u>			
1.5.6.1A	Mode field diameter at 1310 nm	μm	9.2 $\pm$ 0.4	9.2 $\pm$ 0.4
1.5.6.2A	Tolerance of mode field diameter	μm		± 0.4
1.5.6.3A	Rated cladding diameter	μm	125 $\pm$ 1	125 $\pm$ 1
1.5.6.4	Tolerance of cladding diameter	μm		± 1
1.5.6.5A	Mode field diameter at 1550 nm	μm	10.4 $\pm$ 0.5	10.4 $\pm$ 0.5
1.5.6.6A	Cladding non-circularity	%	≤ 1	≤ 1
1.5.6.7A	Core / cladding concentricity	μm	≤ 0.6	≤ 0.6

Item #	Description	Unit	Required	Offered
1.5.6.8A	Coating excentricity	μm	≤ 12	≤ 12
1.5.7A	Transmission Characteristics of Fibers			
1.5.7.1A	Attenuation			
	- at 1310 nm	dB/km	≤ 0.36	≤ 0.36
	- at 1550 nm	dB/km	≤ 0.23	≤ 0.23
1.5.7.2A	attenuation non-uniformity	dB	≤ 0.05	≤ 0.05
1.5.7.3A	Attenuation temperature stability in the range from -55°C to +85°C, for both windows 1310 nm and 1550 nm	dB/km	≤ 0.05	≤ 0.05
1.5.7.4A	Chromatic dispersion			
	- at 1310 nm:	ps/nm.km	≤ 3.5	≤ 3.5
	- at 1550 nm:	ps/nm.km	≤ 18	≤ 18
1.5.7.5A	zero dispersion wavelength λ_0	nm	1300 ... 1324	1300 to 1324
1.5.7.6A	slope at zero dispersion wavelength	ps/nm.km	< 0.092	≤ 0.092
1.5.7.7A	PMD	ps/ $\sqrt{\text{km}}$	≤ 0.1	≤ 0.1
1.5.7.8A	Cut off wave length	nm	≤ 1260	≤ 1260
1.5.7.9A	Splice losses	dB/splice		Maximum 0.1 Average 0.05
1.5.7.10A	Peak increase of temperature at the fiber when above fault current (see "Electrical Characteristics") is applied (ΔT)	K		200 deg C
1.5.7.11A	Max. increase of attenuation of fiber when above fault current is applied:			
	- at 1550 nm	dB/km		≤ 0.05
	- at 1310 nm	dB/km		≤ 0.05

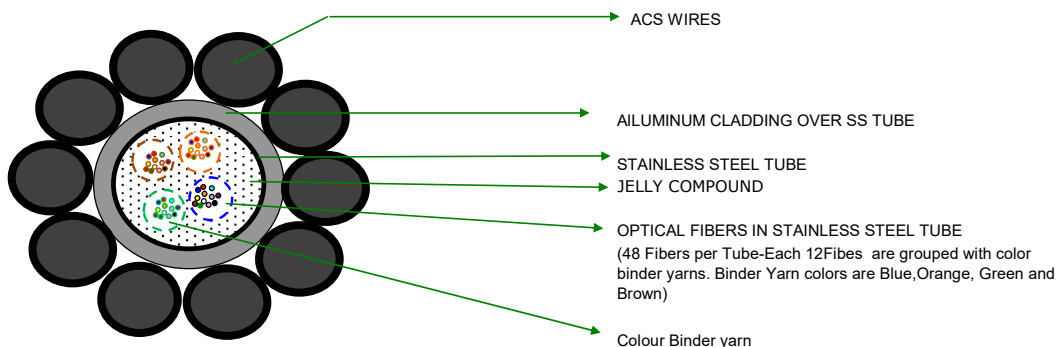
Item #	Description	Unit	Required	Offered
1.5.8A	Mechanical Properties of Fibers			
1.5.8.1A	proof test (elongation, equivalent 1 sec)	%	1	1 %
1.5.8.2A	coating strippability (50 mm, 500 mm/min)	N	1 ... 5	1 ... 5
1.5.8.3A	macroband test, additional loss at 1550 nm, 100 turns on 60 mm mandrel	dB	≤ 0.1	≤ 0.1
1.5.8.4A	Max. allowable temperature at the fiber			
	- short time	°C		-60 °C to +85 °C
	- long time	°C		-60 °C to +85 °C
1.6A	<u>Type Tests on OPGW</u>			
1.6.1A	Water Ingress Test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.2A	Seepage of Flooding Compound as per IEEE Std. 1138 successfully performed?	yes / no		Yes similar construction Type Test report available
1.6.3A	Short Circuit Test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.4A	Aeolian vibration test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.5A	Galloping test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.6A	Sheave test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.7A	Crush test as per IEEE Std. 1138 successfully performed?	yes / no		Yes similar construction Type Test report available
1.6.8A	Impact test successfully performed as per IEEE Std. 1138?	yes / no		Yes similar construction Type Test report available
1.6.9A	Creep test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.10A	Fiber strain test as per IEEE Std. 1138 successfully performed?	yes / no		Yes similar construction Type Test report available

Item #	Description	Unit	Required	Offered
1.6.11A	Strain margin test as per IEEE Std. 1138 successfully performed?	yes / no		Yes similar construction Type Test report available
1.6.12A	Stress-strain test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.13A	Cable cutoff wavelength test performed as per IEEE Std. 1138?	yes / no		Yes similar construction Type Test report available
1.6.14A	Temperature cycle test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.15A	Lightning test successfully performed as per IEC 60794-4-1?	yes / no		Yes similar construction Type Test report available
1.6.16A	Tensile test successfully performed as per IEC 60794-4-1?	yes / no		Yes similar construction Type Test report available
1.7A	<u>Form of Delivery</u>			
1.7.1A	Delivery on reel?	yes/no		Yes
1.7.2A	Standard unjoined length of cable on reel	m	≥ 4000	5000
1.7.3A	OPGW Reel			
1.7.3.1A	Reel material		wood	Steel
1.7.3.2A	Overall reel dimensions			
	- diameter	cm		135
	- width	cm		84
	- weight	kg		180
1.7.3.3A	Reel spindle hole diameter	mm		80
				

Specification Sheet for 48F OPGW

FGB048-1B5.00-1000
PRODUCT INFORMATION

	NOS.	MATERIAL	NOMINAL VALUE
OPTICAL UNIT			
Optical Fibre	48 Nos.	ITU-T G652 D	STERLITE
Cabled attenuation 1310/1550nm		Maximum	≤ 0.36/0.23 dB/Km
Filling Gel		Hydrogen scavenging Type	Thixotropic jelly
Fiber Tube	1 Nos.	Aluminum clad SS tube	5.00 mm Nominal Diameter
GROUNDING UNIT			
Protective Layer - Outer	10 Nos	20.3% ACS wires	Right Hand Lay 2.10 mm Nominal Diameter
Cable Details			
Overall diameter		Single Layer	9.20 mm Nominal Diameter
Total Cross sectional Area			47.66 mm ²
ACS Wire Cross-Sectional Area			34.64 mm ²
Aluminum Tube Cross-Sectional Area			11.08 mm ²

CONSTRUCTIONAL DETAILS


*Cross sectional drawing for indication only, not to scale

Ultimate/Rated Tensile Strength	52 kN	General Tests	IEC 60794, IEEE 1138:2021
Modulus Of Elasticity	134.9 KN/mm ²	Construction	IEEE 1138 :2021
		ACS wires	IEC 63248
		AA wires	IEC 62641

ELECTRICAL PROPERTIES

DC Resistance at 20°C	1.26 Ohm/Km	Fault Current Capacity	17.0 kA ² .sec
Short Circuit Current Rating	4.12 kA for 1 sec.	Temp. change from	40 to 220 °C
Lightning Arc test (EN 60794-1-402) : Class-0 (Current 100 A, Duration 500 ms, Charge Transfer 50 C)			

ENVIRONMENTAL PROPERTIES

Coefficient of linear Expansion	14.0 × 10 ⁻⁶ 1/°C	Operating Temperature Range	- 40 °C to +85 °C
		Installation Temperature Range	- 30 °C to + 70 °C

OPTICAL UNIT

Color Coding of Optica Fibers in Optical Unit (Stainless steel tube)													
Fiber	Binder Yarn color	Fiber Colors											
		1	2	3	4	5	6	7	8	9	10	11	12
Fiber 1-12	Blue	Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Violet	Pink	Aqua
Fiber 13-24	Organge	Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Violet	Pink	Aqua
Fiber 25-36	Green	Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Violet	Pink	Aqua
Fiber 37-48	Brown	Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Violet	Pink	Aqua

PHYSICAL PARAMETERS

Overall Diameter (mm)	9.20 ± 3%	Cable wt. (Kg/km)	285 ± 5%	Standard Cable length	5000 ± 5% Meters
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Guaranteed Technical Particulars 48F OPGW

Item #	Description	Unit	Required	Offered
1A	<u>Optical Ground Wire (OPGW) TYPE A</u> For 110 kV OHL GW Type C-50 (TK 9,1)			
1.1A	<u>General</u>			
1.1.1A	Manufacturer			Sterlite Power Transmission Limited
1.1.1.1A	- name			Sterlite Power Transmission Limited
1.1.1.2A	- place of manufacture			INDIA
1.1.2A	Type designation			FGB048-1B5.00-1000
1.1.3A	Year of first commercial operation of the type offered	year		2010
1.1.4A	Applicable standards	IEC	ITU-T G.652D; IEC 60794, IEC 60793	ITU-T G.652D;IEC 60794, IEEE 1138
1.2A	<u>OPGW Cable Composition</u>			
	<u>Optical Unit</u>			
1.2.1A	max. number of fibers in one buffer tube			One Optical Unit of Aluminum Clad Stainless Steel tube containing 48 Fibers – each 12 Fibers are Bunched with Four Color Binder yarns
1.2.2A	actual number of fibers in one buffer tube		24	48
1.2.3A	Embedding of optical fibers in air or compound?	air / compound		Filling compound -Hydrogen scavenging type
1.2.4A	Spacers within buffer tube?	yes/no		No
1.2.5A	buffer tube:			
1.2.5.1A	- material	Al / St	metallic	Aluminum Cladded stainless steel tube
1.2.5.1A	- extruded or welded?			Stainless steel tube-seamless weld Aluminum Clad steel tube-Extrusion
1.2.5.3A	- inner diameter	mm		3.3 mm stainless steel tube
1.2.5.4A	- outer diameter	mm		5.0 mm Aluminum clad SS Tube

Item #	Description	Unit	Required	Offered
1.2.6A	excess length of optical fiber (over length of buffer tube)	%		≥0.1% (Stainless steel tube)
1.2.7A	number of buffer tubes in cable			One
1.2.8A	are buffer tubes color coded?	yes/no		No
1.2.9A	location of buffer tubes in cable			Center
1.2.10A	<u>Cable Centre</u>			
1.2.10.1A	Is the centre of the cable an optical unit /strain element/ conductor element?			Optical unit
1.2.10.2A	- material			Aluminum clad stainless steel tube
1.2.10.3A	- diameter			5.0 MM
	<u>Armoring Layers</u>			
1.2.11A	Area of load bearing elements	mm ²		47.66
1.2.12A	Number of stranded layers		At least 1 above the optical unit	One layer
1.2.13A	1st layer of stranded wires			
	- number of wires			10 No's
	- shape of wires	e.g. round		Round
	- material of wires			Aluminum Clad steel wires
	- diameter of wires	mm		2.1 mm
	- layer filled with grease?	yes/no		No
1.2.14A	2nd layer of stranded wires			
	- number of wires			NA
	- shape of wires	e.g. round		NA

Item #	Description	Unit	Required	Offered
	- material of wires			NA
	- diameter of wires	mm		NA
	- layer filled with grease?	yes/no		NO
1.2.15A	Winding direction of outer layer	Z or S		Right (Z)
1.2.16A	Cross-sectional drawing attached, drawing Nr.			Specification sheet attached
1.3A	<u>Mechanical Properties of OPGW</u>			
1.3.1A	Cable outer diameter	mm	≤ 9.2	9.2
1.3.2A	Rated tensile strength of cable RTS (calculated acc. to IEC 60794-4-1)	kN	≥ 52	52
1.3.3A	Area of buffer tube included in calculation of RTS?	yes/no		NO
1.3.4A	Everyday stress on cable	N/mm ²		218
1.3.5A	Maximum allowable stringing tension	N/mm ²		436
1.3.6A	Mass of OPGW	kg / km	max. 400	285
1.3.7A	Mass of grease in OPGW (if applicable, and included in the above)	kg / km		NA
1.3.8A	Linear thermal expansion coefficient	10 ⁻⁶ /K		14.0 x 10 ⁻⁶
1.3.9A	Creep yield			
1.3.10A	Minimum bending radius	mm		184
1.3.11A	Modulus of elasticity	kN/mm ²		134.9
1.3.12A	Ambient operating temperature range	°C	- 35 to + 50	-40 to +85
1.3.13A	Max. continuous operating temperature of cable without increase of optical attenuation	°C	≥ 60	Complied
1.3.14A	Maximum crush force			
	- long term	kg/mm ²		148.2
	- short term	kg/mm ²		148.2

Item #	Description	Unit	Required	Offered
1.3.15A	Minimum bending radius			
	- under operating conditions	mm		276
	- under nominal tensile strength	mm		368
1.4A	<u>Electrical Characteristics of OPGW</u>			
1.4.1A	DC resistance at 20 °C R_{DC}	Ohm/km	≤ 0.5	≤ 1.26
1.4.2A	Fault current carrying capacity (at initial temperature 40 °C)	kA ² sec	≥ 60	17 KA ² .sec
1.4.3A	Peak increase of temperature at the fiber when above fault current is applied (ΔT)	K		180 C
1.5A	<u>Optical fibers</u>			
1.5.1A	Manufacturer			Sterlite
1.5.2A	Place of manufacture			India
1.5.3A	Type designation			G652D
1.5.4A	type of fiber		single mode ITU-T G.652D	single mode ITU-T G.652D
1.5.5A	Operation wavelength	nm	1310 and 1550	1310 and 1550
1.5.6A	Geometrical Parameters of Fibers			
1.5.6.1A	Mode field diameter at 1310 nm	μm	9.2 $\pm$ 0.4	9.2 $\pm$ 0.4
1.5.6.2A	Tolerance of mode field diameter	μm		± 0.4
1.5.6.3A	Rated cladding diameter	μm	125 $\pm$ 1	125 $\pm$ 1
1.5.6.4	Tolerance of cladding diameter	μm		± 1
1.5.6.5A	Mode field diameter at 1550 nm	μm	10.4 $\pm$ 0.5	10.4 $\pm$ 0.5
1.5.6.6A	Cladding non-circularity	%	≤ 1	≤ 1
1.5.6.7A	Core / cladding concentricity	μm	≤ 0.6	≤ 0.6

Item #	Description	Unit	Required	Offered
1.5.6.8A	Coating excentricity	μm	≤ 12	≤ 12
1.5.7A	Transmission Characteristics of Fibers			
1.5.7.1A	Attenuation			
	- at 1310 nm	dB/km	≤ 0.36	≤ 0.36
	- at 1550 nm	dB/km	≤ 0.23	≤ 0.23
1.5.7.2A	attenuation non-uniformity	dB	≤ 0.05	≤ 0.05
1.5.7.3A	Attenuation temperature stability in the range from -55°C to +85°C, for both windows 1310 nm and 1550 nm	dB/km	≤ 0.05	≤ 0.05
1.5.7.4A	Chromatic dispersion			
	- at 1310 nm:	ps/nm.km	≤ 3.5	≤ 3.5
	- at 1550 nm:	ps/nm.km	≤ 18	≤ 18
1.5.7.5A	zero dispersion wavelength λ_0	nm	1300 ... 1324	1300 to 1324
1.5.7.6A	slope at zero dispersion wavelength	ps/nm.km	< 0.092	≤ 0.092
1.5.7.7A	PMD	ps/ $\sqrt{\text{km}}$	≤ 0.1	≤ 0.1
1.5.7.8A	Cut off wave length	nm	≤ 1260	≤ 1260
1.5.7.9A	Splice losses	dB/splice		Maximum 0.1 Average 0.05
1.5.7.10A	Peak increase of temperature at the fiber when above fault current (see "Electrical Characteristics") is applied (ΔT)	K		200 deg C
1.5.7.11A	Max. increase of attenuation of fiber when above fault current is applied:			
	- at 1550 nm	dB/km		≤ 0.05
	- at 1310 nm	dB/km		≤ 0.05

Item #	Description	Unit	Required	Offered
1.5.8A	Mechanical Properties of Fibers			
1.5.8.1A	proof test (elongation, equivalent 1 sec)	%	1	1 %
1.5.8.2A	coating strippability (50 mm, 500 mm/min)	N	1 ... 5	1 ... 5
1.5.8.3A	macroband test, additional loss at 1550 nm, 100 turns on 60 mm mandrel	dB	≤ 0.1	≤ 0.1
1.5.8.4A	Max. allowable temperature at the fiber			
	- short time	°C		-60 °C to +85 °C
	- long time	°C		-60 °C to +85 °C
1.6A	<u>Type Tests on OPGW</u>			
1.6.1A	Water Ingress Test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.2A	Seepage of Flooding Compound as per IEEE Std. 1138 successfully performed?	yes / no		Yes similar construction Type Test report available
1.6.3A	Short Circuit Test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.4A	Aolian vibration test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.5A	Galloping test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.6A	Sheave test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.7A	Crush test as per IEEE Std. 1138 successfully performed?	yes / no		Yes similar construction Type Test report available
1.6.8A	Impact test successfully performed as per IEEE Std. 1138?	yes / no		Yes similar construction Type Test report available
1.6.9A	Creep test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.10A	Fiber strain test as per IEEE Std. 1138 successfully performed?	yes / no		Yes similar construction Type Test report available

Item #	Description	Unit	Required	Offered
1.6.11A	Strain margin test as per IEEE Std. 1138 successfully performed?	yes / no		Yes similar construction Type Test report available
1.6.12A	Stress-strain test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.13A	Cable cutoff wavelength test performed as per IEEE Std. 1138?	yes / no		Yes similar construction Type Test report available
1.6.14A	Temperature cycle test successfully performed as per IEC 60794-4-1 or IEEE Std. 1138?	IEC / IEEE / none		Yes similar construction Type Test report available
1.6.15A	Lightning test successfully performed as per IEC 60794-4-1?	yes / no		Yes similar construction Type Test report available
1.6.16A	Tensile test successfully performed as per IEC 60794-4-1?	yes / no		Yes similar construction Type Test report available
1.7A	<u>Form of Delivery</u>			
1.7.1A	Delivery on reel?	yes/no		Yes
1.7.2A	Standard unjoined length of cable on reel	m	≥ 4000	5000
1.7.3A	OPGW Reel			
1.7.3.1A	Reel material		wood	Steel
1.7.3.2A	Overall reel dimensions			
	- diameter	cm		135
	- width	cm		84
	- weight	kg		180
1.7.3.3A	Reel spindle hole diameter	mm		80
				